

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/777,210
First Named Applicant : Christopher R. CORDING
Filed : February 13, 2004
TC/A.U. : 3635
Examiner : William V. Gilbert

Docket No. : 0124-122
Customer No. : 06449

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

DECLARATION CHRISTOPHER R. CORDING UNDER 37 C.F.R. § 1.132

Dear Sir:

I, Christopher R. CORDING declare:

1. I am the Christopher R. Cording listed as an inventor on the above-referenced patent application. I am the inventor of the subject matter described and claimed in United States Patent Application Serial No. 10/777,210, filed February 13, 2004, entitled "Energy-Free Refrigeration Door and Method for Making the Same" ("210 application"). I have read, and am familiar with, the '210 application, the prosecution history of the '210 application, the outstanding Office Action now pending, and the Reply filed concurrently with my declaration. I have also reviewed, and am familiar with, the Heaney patent (USP 4,477,129), the Misonou patent (USP 6,830,791) and the Richardson patent (USP 5,113,628).

2. In my research regarding conductive coatings for refrigerated doors, I discovered that the need for electric heat on refrigerator/freezer doors could be completely eliminated by improving the insulating value of the insulated glass unit ("IGU") to prevent condensation. More specifically, I discovered that the use of multiple glass panels with low emissivity ("Low-

E”) coatings could achieve U-values sufficient to prevent condensation. This was a surprising and unexpected result, as it was previously unknown and unexplored in the industry that this specific type of structure could be used to eliminate the need for electric heat.

3. On June 8, 1998, I conceived of a glass door for a refrigerated display case that included an IGU comprised of three glass panels and two warm edge spacer assemblies. Each of the glass panels had an inside surface and an outside surface. The two outer glass panels had a Low-E coating applied to their inside surface. The intermediate glass panel could, optionally, have a Low-E coating applied to either surface. The refrigerated display case door I conceived of also included a frame extending about and supporting at least one of the glass panels.

4. At that time (i.e., on June 8, 1998), I also conceived of the IGU in the refrigeration door including two glass panels and one warm edge spacer assembly, where each of the glass panels had a Low-E coating applied to its inside surface.

5. I immediately went to work on the invention. I first contacted Marc Sullivan to help with doing a computer simulation. I explained the invention I had conceived of, as described in ¶¶ 3 and 4 above, to him and he went to work preparing the computer simulation. Using the computer simulation, I confirmed the unexpected result that an IGU including a combination of three panes of Comfort TI-R® or of Comfort Ti-PS® Low-E coated glass assembled with a warm edge spacer could meet the necessary requirements to prevent condensation on refrigeration glass doors without the application of electricity.

6. To confirm the performance of my energy free door, we purchased a small freezer on June 22, 1998. My colleagues Mark Ford, Herb Johnson and I immediately began to assemble the materials we needed for constructing our door. Our prototype door included an IGU comprised of three pieces of AFG’s Comfort Ti-PS® glass of identical dimensions and AFG’s ComfortSeal® warm edge spacer. We formed the triple-pane IGU using two ComfortSeal® spacer assemblies, one positioned between the outer piece of glass and the middle piece of glass and the other positioned between the middle and the inner pieces of glass. We

removed the freezer door and replaced it with our prototype glass door. Over the next three or four weeks, we observed the door to see if any condensation formed on the outside glass. There was never any condensation on the door.

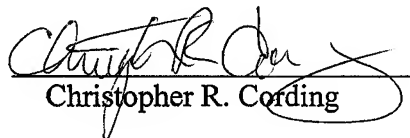
7. On July 29, 1998, I recorded the results from tests of the prototype, which verified that the computer model had accurately predicted that my design would provide the properties needed for an energy free refrigeration door.

8. The testing confirmed my discovery that the use of Low-E coatings in the structure of the present invention, such that the IGU had a total emissivity substantially equal to or less than 0.05, could yield IGUs having U-values substantially equal to or less than 0.2 BTU/hr-sq ft-F. These values are critical to the performance of the present invention. Specifically, the use of an IGU with these values is necessary to form a refrigerator door that prevents condensation on the outside surface without the application of electricity or heat.

9. As I indicated above, I have read, and am familiar with, the outstanding Office Action, dated April 3, 2009, as well as the cited patents to Heaney (USP 4,477,129), Misonou (USP 6,830,791) and Richardson (USP 5,113,628). In my view, the combination of the aforementioned cited documents would, in no way, lead one of skill in the art to arrive at the claimed subject matter, and only if one of skill in the art is equipped with the disclosure of the present application, would one of skill in the art be able to arrive at the claimed subject matter. More specifically, the present application discloses, at pages 8 and 9, that it was my own discovery, and the subsequent testing and computer modeling of my invention, that showed that U values of approximately 0.2 BTU/hr-ft²-F or less (and emissivity values of 0.05 or less) are required for the refrigeration door to prevent condensation, without the need for the application of energy, on the outside of the glass under the performance requirements of U.S industry

standards. This is not disclosed or suggested in any way by Heaney (USP 4,477,129), Misonou (USP 6,830,791), Richardson (USP 5,113,628) or any other prior art reference that I am aware of, and was not within the knowledge of those skilled in this art as of the time I made the claimed invention, as of the time I filed the '210 application or at anytime prior to the publication of the '210 application.

10. All statements made herein of my own knowledge are true and all statements made on information and belief, are believed to be true. These statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

By: 
Christopher R. Cording

10/2/09
Date